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REMARKS

Claims 1-18 and 20-33 stand rejected under 35 U.S.C. 102(b). Claim 19 stands rejected under 35 U.S.C. 103(a). Claim 28 stands objected to. Applicants have cancelled claims 5, 18-19 and amended claims 1, 6, 7, 12, 13, 14, 20, 21, 23, 24 and 28. Claims 1-4, 6-17 and 20-33 remain pending. The Examiner's bases for rejecting those claims are addressed below. Reconsideration of the application is respectfully requested.

Rejections Under 35 U.S.C. 102(b)

The Examiner rejected claims 1-18 and 20-33 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,698,869 to Yoshimi et al.¹ Yoshimi et al. describes a prior art fabrication process for a particular generation of field effect transistors called a SOLMOSFET in which a silicon-germanium region 207 is formed in a silicon substrate, preferably entirely within the interior of a source drain region 206. The silicon germanium layer 207 extends from the surface of the silicon substrate down to some depth in the silicon body as shown in FIG. 4A. While FIG. 4A of Yoshimi et al. shows the desired processing outcome, FIG. 7 depicts, at least in the eyes of the Yoshimi et al. inventors, an example of unsuccessful processing. In particular, FIG. 7 shows an example of what might happen if the silicon-germanium region 207 is formed with its lateral boundary too close the source/drain region junction interface 215. According to Yoshimi et al., a crystal defect region, D, is generated so as to traverse the pn junction interface 215 of the source/drain region 206 and the channel region 203. The crystal defect region D consists of multiple, parallel defect planes generated mainly along the {111} planes.

Applicants have amended claim 1 to recite the formation of a buried amorphous region in a device region and the forming of a dislocation region in the device region by annealing the substrate to recrystallize the buried amorphous region. Yoshimi et al. does not disclose the formation of a dislocation region by first forming a buried amorphous region and thereafter annealing to recrystallize the buried amorphous region. As noted above, the silicon germanium film 207 is a surface film extending from the surface of the silicon down to some depth in the body thereof.

¹The element numbering used in Yoshimi et al. is followed herein.

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The foregoing discussion is directed primarily to claim 1 and the claims depending therefrom. Applicants now take this opportunity to comment specifically on the rejection of various other claims.

Regarding claim 2, Applicants respectfully submit that Yoshimi et al. does not disclose the formation of a dislocation region in conjunction with a dual graded source/drain region, that is, one that includes a source/drain extension region and an overlapping impurity region. The source/drain region 206 disclosed in FIG. 7 of Yoshimi et al. is a single graded source/drain region.

Claim 3 is distinguishable over Yoshimi et al. for the reasons advanced above for claim 2.

Claim 4 is distinguishable over the teachings of Yoshimi et al. for the reasons advanced above with regard to claim 1.

Claim 6 has been amended to change the dependency thereof from now-cancelled claim 5 to claim 1 and to include the word "buried" to maintain consistency with the language of claim 1. Claim 6 is distinguishable over Yoshimi et al. for the reasons advanced above for claim 1.

Claim 7 has been amended to recited the formation of a buried amorphous region in the device region and the formation of one of two dislocation regions by annealing the substrate to recrystallize the buried amorphous region. Thus, for reasons similar to those advanced above with regard to claim 1, claim 7 is distinguishable over Yoshimi et al.

Claims 8, 9, 10 and 11 are distinguishable over the teachings of Yoshimi et al. for the same general reasons advanced above with regard to claims 2 and 3, albeit in the context of the base claim 7.

Claim 12 is distinguishable over Yoshimi et al. since Yoshimi et al. does not disclose the formation of two buried amorphous regions and a dislocation region traversing a junction.

Claim 13 is distinguishable over Yoshimi et al. for the reasons advanced above with regard to claim 12.

Applicants have amended claim 14 to add therein the recitation of the formation of first and second buried amorphous regions and the forming of first and second dislocation regions by recrystallizing the first and second buried amorphous regions. As noted above in the discussion of

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claim 1, Yoshimi et al. does not disclose the formation of buried amorphous regions or the formation of dislocation regions traversing a junction from those amorphous regions.

Claims 15 and 16 are distinguishable over Yoshimi et al. for the reasons generally advanced above with regard to claims 2 and 3, albeit in the context of base claim 14.

Claim 17 is distinguishable over Yoshimi et al. for the reasons advanced above with regard to claims 15 and 16.

Claim 20 has been amended to change the dependency thereof from now-cancelled claim 18 to base claim 14. In addition, claim 20 includes language to more closely track the language of base claim 14. For the reasons advanced above with regard to the patentability of claim 14, Applicants submit that claim 20 is similarly distinguishable over Yoshimi et al.

Claim 21 has been amended to recite at first and second dislocation regions in a device region wherein the first and second dislocation regions are in non-parallel spatial relationship and traverse a junction. The features identified in Yoshimi et al. as crystal defects in FIG. 7 are parallel in space.

Claims 22, 23 and 24 are distinguishable over Yoshimi et al. for the reasons generally advanced above with regard to claims 2 and 3, albeit in the context of base claim 21. Claims 25, 26 and 27 are distinguishable over the teachings of Yoshimi et al. for the reasons advanced above with regard to claim 21.

Applicants have amended claim 28 to include the word "region" therein as suggested by the Examiner in order to overcome the claim objection. Applicants respectfully take this opportunity to point out to the Examiner that claim 28 recites first and second impurity regions with respective first and second extension regions. As noted elsewhere herein, Yoshimi et al. does not disclose a device including source/drain extension regions and dislocation regions traversing the junctions of those source/drain regions.

Applicants submit that claims 29-33 are similarly distinguishable over Yoshimi et al. for the reasons advanced above with regard to claim 28.

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Rejection under 35 U.S.C. 103(a)

The Examiner rejected claim 19 under 35 U.S.C. 103(a) as being unpatentable over Yoshimi et al. The rejection of claim 19 has been mooted in view of the cancellation thereof.

Conclusion

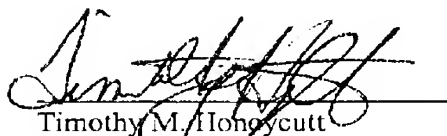
For the extensive reasons advanced above, Applicants submit that claims 1-4, 6-17 and 20-33 are patentable and respectfully request that a Notice of Allowability issue in due course.

Miscellaneous

The Assistant Commissioner is authorized to charge any required fees or credit any overpayment to Deposit Account No. 01-0365, Order No. AMDI:115\HON.

Respectfully submitted,

Date: October 9, 2003



Timothy M. Honeycutt
Reg. No. 37,153
Attorney at Law
P.O. Box 1577
Cypress, Texas 77410-1577
(281) 379-7999 Voice
(281) 379-7997 Fax
timhoney@sprynet.com e-mail
Attorney for Assignee
ADVANCED MICRO DEVICES, INC.

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OCT 10 2003